FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M04513	Client:	Alaskan Copper Works
Date Received:	08/20/09	Project:	Citric Acid Test, PO M04513, F&BI 908158
Date Extracted:	08/20/09	Lab ID:	908158-01 x100
Date Analyzed:	08/27/09	Data File:	908158-01 x100.045
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	106	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	2,780
Nickel	22,300
Copper	12,200
Zinc	11,700

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	Citric Acid Test, PO M04513, F&BI 908158
Date Extracted:	08/20/09	Lab ID:	I9-347 mb 2
Date Analyzed:	08/27/09	Data File:	I9-347 mb 2.044
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	101	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<1

Date of Report: 09/01/09
Date Received: 08/20/09
Project: Citric Acid Test, PO M04513, F&BI 908158
Date Analyzed: 08/27/09

RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Sample ID Laboratory ID	Percent Acid
M04513 908158-01	1.6

Date of Report: 09/01/09
Date Received: 08/20/09
Project: Citric Acid Test, PO M04513, F&BI 908158

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 908097-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Chromium	ug/L (ppb)	<1	<1	nm	0-20
Nickel	ug/L (ppb)	<1	<1	nm	0-20
Copper	ug/L (ppb)	17.4	16.6	5	0-20
Zinc	ug/L (ppb)	19.2	18.7	3	0-20

Laboratory Code: 908097-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Chromium	ug/L (ppb)	20	<1	101	50-150
Nickel	ug/L (ppb)	20	<1	101	50-150
Copper	ug/L (ppb)	20	17.4	103 b	50-150
Zinc	ug/L (ppb)	50	19.2	102 b	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	88	70-130
Nickel	ug/L (ppb)	20	92	70-130
Copper	ug/L (ppb)	20	89	70-130
Zinc	ug/L (ppb)	50	90	70-130

Date of Report: 09/01/09
Date Received: 08/20/09
Project: Citric Acid Test, PO M04513, F&BI 908158

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Laboratory Code: 908158-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Percent Acid	1.6	1.6	0	0-20

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
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Seattle, WA 98119-2029
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September 1, 2009

DUPLICATE

INVOICE # 09ACU0901-2

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Citric Acid Test, PO M04513, F&BI 908158 - Results of testing requested by Gerry Thompson for material submitted on August 20, 2009.

1 sample analyzed for Total Chromium, Copper, Nickel and Zinc by Method 200.8 @ $85 per sample	$ 85.00
1 sample analyzed for Percent Acid Content @ $75 per sample	75.00
Rush Charges (5 day) 50% of $160.00	80.00
Amount Due	$ 240.00

FEDERAL TAX ID # (b) (6)

908158

SAMPLE CHAIN OF CUSTODY ME 08/20/09 AI4

Send Report To Gerald Thompson
Company ALASKAN Copper Works
Address 628 S. Hanford St
City, State, ZIP Seattle WA 98134
Phone # 206-587-4033 Fax # 206-382-4809

SAMPLERS (signature)

PROJECT NAME/NO. Citric Acid Test

PO # M04513

REMARKS

Page # ___ of ___

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH 4 day

Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	% of Acid	Cu wt %				Notes
M04513	01	8/20/09	10:00	Citric Acid	1							X	X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gerald Thompson	ACW	8/20/09	10:58am
Received by:	Nhan Phan	FeBI	8/20/09	10:58
Relinquished by:				
Received by:				

Samples received at 2°C

Friedman & Bruya, Inc.
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FORMS\COC.DOC

FRIEDMAN & BRUYA, INC.

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September 1, 2009

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on August 20, 2009 from the Citric Acid Test, PO M04513, F&BI 908158 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0901R.DOC